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First Report on the Repair
and
Recondition of Four K-20 Cameras

Ref: 175

May 1956

The following preliminary survey was made subsequent to the customer's flight tests and follows the outline of his report dated April 13, 1956. Under each Camera number the customer's criticisms are listed followed by Photomechanisms analysis and/or corrections.

Camera # 1

- (a) No film advance
- (b) Poor instrument definition
- (c) Instrument lighting erratic

- (a) Pin broken on film advance gear
- (b) Instruments appeared out of focus because the platen retracted too fast after exposure. The grease applied to the platen by Fairchild Camera to slow down this movement gradually wore off, causing trouble.

A spring was installed to maintain a constant platen speed.

- (c) The duration of the lamp flash was erratic due to relay failure allowing the tugger switch and the platen cut off switch to control the lamps.

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The relay failed only due to low voltage. Charging the batteries eliminated the trouble.

During further test the film advance again failed, this time the pin in the film advance handle broke or fell out.

Camera # 2

- (a) Instrument over or under exposed.
- (b) Watch set at improper angle.
 - (a) Contacts on trigger switch out of adjustment permitting an occasional double exposure. Weak batteries account for the underexposed recordings. Charged batteries with good results.
 - (b) The watch was not properly inserted on mounting stud. Watch should be rotated until ball drops into detent.

Camera # 3

- (a) Horizon shutter reported inoperative.
 - (a) Tested camera on bench and could not get a failure. Charged batteries shot roll of film with 100% success. Suggest operator check apperature of horizon lens.

Camera # 4

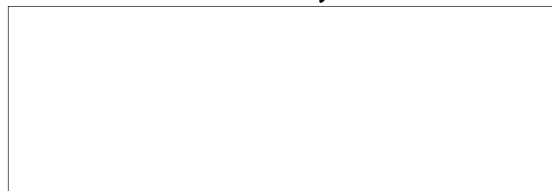
- (a) Horizon shutter failed occasionally.
- (b) Did not record picture format after $1\frac{1}{2}$ rolls of film.

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- (a) No horizon shutter failure after changing batteries.
- (b) No film advance - take-up clutch slips.

Conclusion: Mechanically the cameras cannot be considered reliable without further testing. Modifications appear satisfactory.

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3D

Second Report on the Repair
and
Reconditioning of Four K-20 Cameras

Ref: 175

September 1956

This report and the repairs described may be considered in continuation of our First Report dated May 1956.

Mechanical

The mechanical condition of all cameras was inspected. A missing part was made up and installed in the take-up clutch pawl on Camera No. 4. Any symptom of mechanical failure in any one camera was investigated and/or repaired in all cameras. The vacuum platen return rate was adjusted by means of a spring added to the mechanism of each camera.

All cameras were operated for several hundred frames and some for over 1000.

Optical

All cameras were rechecked for quality of optical imagery. One set of instrument recording lenses had to be refocused after the mechanical change in the platen retraction rate. One set of lenses was found to be coated with oil film resulting in some image deterioration.

3D

Electrical

Measurements were made of the dynamic electrical characteristics as follows:

Shutter operating time	.023 seconds
Shutter solenoid current	2 amperes
Lamp flash time	.030 seconds
Lamp current	4 x .45 = 1.8 amperes
Relay operating time	.100 seconds
Relay current	.060 amperes

Total power is .09 ampere hours/roll. As a cross check a camera with fully charged batteries was operated for 500 pictures without fully discharging the batteries.

Two sets of batteries were found to be damaged beyond repair and new batteries were installed on all cameras. Because of leakage the batteries should be stored in an upright position and preferably in a discharged state.

Resetting of some of the switches was necessitated by changes in the platen retraction rates.

General

At least one full roll of film was shot with each and is supplied with this report. Every aspect of the operation was considered satisfactory.

Photomechanisms considers that all reasonable steps have been taken to insure reliable satisfactory operation of these cameras for a few rolls of film.

Photomechanisms, Inc.



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